EXHIBIT 4

SOAH DOCKET NO. 582-07-2673
SOAH DOCKET NO. 582-07-2674
TCEQ DOCKET NO. 2007-0204-WDW
TCEQ DOCKET NO. 2007-0362-IHW

APPLICATION OF TEXCOM GULF DISPOSAL, LLC FOR TEXAS COMMISSION ON ENVIRONMENTAL QUALITY UNDERGROUND INJECTION CONTROL PERMIT NOS. WDW 410, WDW 411, WDW 412 AND WDW 413	§ § § § § § §	**BEFORE THE STATE OFFICE**
	§	**OF**
APPLICATION BY TEXCOM GULF DISPOSAL, LLC FOR TEXAS COMMISSION ON ENVIRONMENTAL QUALITY INDUSTRIAL HAZARDOUS WASTE PERMIT NO. 87758	§ § § § § §	**ADMINISTRATIVE HEARINGS**

DIRECT TESTIMONY

OF

JAMES W. FAIRCHILD, P.E.

ON BEHALF OF

DENBURY ONSHORE, LLC

SOAH DOCKET NO. 582-07-2673
SOAH DOCKET NO. 582-07-2674
TCEQ DOCKET NO. 2007-0204-WDW
TCEQ DOCKET NO. 2007-0362-IHW

APPLICATION OF TEXCOM GULF	§	
DISPOSAL, LLC FOR TEXAS	§	
COMMISSION ON	§	
ENVIRONMENTAL QUALITY	§	**BEFORE THE STATE OFFICE**
UNDERGROUND INJECTION	§	
CONTROL PERMIT NOS. WDW 410,	§	
WDW 411, WDW 412 AND WDW 413	§	**OF**
	§	
APPLICATION BY TEXCOM GULF	§	
DISPOSAL, LLC FOR TEXAS	§	**ADMINISTRATIVE HEARINGS**
COMMISSION ON	§	
ENVIRONMENTAL QUALITY	§	
INDUSTRIAL HAZARDOUS WASTE	§	
PERMIT NO. 87758	§	

DIRECT TESTIMONY OF JAMES W. FAIRCHILD, P.E.
ON BEHALF OF DENBURY ONSHORE, LLC

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is James W. Fairchild. My business address is Fairchild and Wells, Inc. (d/b/a Fairchild & Stan), 1011 Highway 6 South, Houston, Texas 77077-1036.

Q. DO YOU RECOGNIZE THE DOCUMENT THAT HAS BEEN MARKED AS DENBURY EXHIBIT 5?

A. Yes.

Q. DESCRIBE THIS EXHIBIT.

A. It is a copy of my résumé.

Q. DID YOU PREPARE THIS EXHIBIT?

A. Yes.

Q. IS THE INFORMATION ON YOUR RÉSUMÉ TRUE AND CORRECT?

A. Yes.

Q. DOES YOUR RÉSUMÉ ACCURATELY DESCRIBE YOUR EDUCATION, EXPERIENCE, AND TRAINING?

A. Yes, it does.

DENBURY OFFERS DENBURY EX. 5.

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received my Bachelor of Science degree in Mechanical Engineering from the University of Florida in 1963 and a Masters of Science Degree in Mechanical Engineering from the University of Florida in 1965.

Q. BY WHOM ARE YOU CURRENTLY EMPLOYED AND WHAT IS YOUR POSITION?

A. I am the president and co-founder of Fairchild and Wells Inc., a petroleum and environmental consulting firm. The firm was founded in 1982.

Q. WHAT TYPES OF PROJECTS DO YOU UNDERTAKE IN YOUR CURRENT POSITION?

A. I conduct reservoir and management studies related to the production of oil and gas reservoirs during primary, secondary (water flood and gas injection) and tertiary (CO_2/hydrocarbon gas injection) operations. I specialize in the application of reservoir simulation to optimize reservoir development. I conduct major simulation studies of oil and gas reservoirs including the integration of surface facilities and provide technical support to clients in the use of reservoir simulation. I also conduct gas storage evaluations to optimize top/base ratios, maximize rate of withdrawal/injection and inventory verification. In addition, I direct permit applications for Class I and Class II injection well projects.

Q. HAVE YOU PREVIOUSLY BEEN ADMITTED AS AN EXPERT AND TESTIFIED ON ISSUES RELATING TO RESERVOIR CHARACTERIZATION AND SIMULATION?

A. Yes. I have been admitted as an expert in various hearings and litigation before the Railroad Commission of Texas, the Colorado Oil and Gas Conservation Commission, and in Federal court in California.

Q. DESCRIBE YOUR PAST WORK EXPERIENCE.

A. I have spent most of my professional life on projects characterizing reservoirs and assessing the movement of fluids in underground geologic formations. Since 1971, my work has dealt extensively with performing reservoir simulation studies. In recent years, my work has been related to gas storage simulations and CO2 compositional simulations.

Q. IN THE COURSE OF YOUR PROFESSION, HAVE YOU DEVELOPED AN IN-DEPTH UNDERSTANDING OF HOW FLUIDS MOVE WITHIN SUBSURFACE FORMATIONS?

A. Yes.

Q. DO YOU HOLD ANY PARTICULAR LICENSES OR CERTIFICATIONS, AND DO YOU HAVE ANY PROFESSIONAL AFFILIATIONS OR PARTICIPATE IN PROFESSIONAL ACTIVITIES IN YOUR AREAS OF EXPERTISE?

A. Yes, I am a registered professional engineer in Texas and my firm is registered with the State of Texas to provide engineering consulting services.

Q. DO YOU PARTICIPATE IN CONTINUING EDUCATION ACTIVITIES?

A. Yes. I attend conferences on technical subjects sponsored by various professional associations associated with my work.

Q. DO YOU BELONG TO ANY PROFESSIONAL ASSOCIATIONS?

A. Yes. I am a member of the Society of Petroleum Engineers, the Geothermal Resources Council and the National Energy Services Association.

Q. HAVE YOU WRITTEN ANY PAPERS OR MADE PRESENTATIONS ON RESERVOIR SIMULATION?

A. Yes. I have presented technical papers at various conferences and seminars as identified in my resume.

Q. HAVE YOU BEEN RETAINED TO TESTIFY REGARDING THE APPLICATION FOR AN UNDERGROUND INJECTION CONTROL PERMIT SUBMITTED TO THE TCEQ BY TEXCOM GULF DISPOSAL, LLC ("TEXCOM") IN MONTGOMERY COUNTY, TEXAS?

A. Yes, I have.

Q. IN WHAT CAPACITY HAVE YOU BEEN RETAINED TO TESTIFY?

A. I have been retained as an independent reservoir simulation expert to evaluate TexCom's modeling exercise submitted in support of TexCom's application for an injection well. In addition, I was asked to model the injection process to determine the pressure rise at the injection well and at distance from the well.

Q. ARE YOU FAMILIAR WITH THE TCEQ'S RULES RELATING TO UNDERGROUND INJECTION CONTROL WELLS?

A. Yes, I am generally familiar with the rules from the prior UIC work described in my resume.

Q. ARE YOU FAMILIAR WITH THE TYPE OF PROJECT TEXCOM IS PROPOSING?

A. Yes. I have managed and participated in the development of permit applications for other UIC projects.

DENBURY ONSHORE, LLC OFFERS MR. FAIRCHILD AS AN EXPERT IN RESERVOIR ENGINEERING, RESERVOIR SIMULATION, THE MOVEMENT OF FLUIDS IN SUBSURFACE FORMATIONS AND THE ASSOCIATED GEOLOGICAL AND HYDRO-GEOLOGICAL ANALYSES.

Q. HAVE YOU PERFORMED ANY ANALYSES AS A PART OF YOUR TESTIMONY?

A. Yes, based on the recent direct testimony of Greg Casey submitted for the remand hearing which included modeling new input conditions requested by the TCEQ, I have performed similar simulations to evaluate the impact of the current and future operations in the Cockfield formation on TexCom's proposed operations based on my understanding of the reservoir characteristics.

Q. WHAT RESOURCES DID YOU PRIMARILY RELY UPON IN PERFORMING YOUR ANALYSIS?

A. I relied on the following documents in my analysis:

- the testimony of Greg Casey dated February 4, 2010 and the associated exhibits, which are marked as TexCom Exhibits 84 through 91.
- Appendix I of the modeling report identified as TexCom Exhibit 85;
- a Geomap supplied to me by Denbury;
- the well log for WDW410 with the various intervals marked by Denbury;
- a summary of Conroe Field reservoir properties provided to me by Denbury, taken from the Exxon Unitization Study;

- a 1975 paper entitled A Study of the Conroe Field;
- the testimony of Greg Casey marked TexCom Exhibit 49;
- Injection/falloff testing from 1999 and 2009 for WDW410; and
- the Time Step summary and the Total Run Summary of Mr. Casey's simulation referred to on page 10 of TexCom Exhibit No. 85.

In addition, I relied upon my general knowledge of the Conroe field.

Q. ARE THESE THE TYPES OF RESOURCES GENERALLY RELIED ON BY EXPERTS IN YOUR FIELD IN EVALUATING SIMILAR ISSUES?

A. Yes.

Q. IN PERFORMING YOUR ANALYSES DID YOU RELY UPON ANY PARTICULAR MODELING PROGRAM?

A. Yes, I used VIP, which is a commercial product of Landmark, a Halliburton company.

Q. PLEASE DESCRIBE VIP

A. VIP is a three dimensional three phase platform used to simulate reservoir processes. I have used VIP for almost 30 years.

Q. IS VIP THE TYPE OF PROGRAM GENERALLY RELIED ON BY EXPERTS IN YOUR FIELD IN EVALUATING SIMILAR ISSUES?

A. Yes.

Q. IS VIP DIFFERENT FROM THE PROGRAM USED BY TEXCOM IN ITS APPLICATION?

A. Yes. TexCom used Boast.

Q. ARE YOU AWARE OF BOAST?

A. Yes. It is the same type of program as VIP.

Q. IN GENERAL, WHAT PARAMETERS WERE TAKEN INTO ACCOUNT IN THE MODELING THAT YOU PERFORMED IN SUPPORT OF YOUR TESTIMONY?

A. I look at simulation as having two things: parameters used to calculate volume (such as structure, thickness (gross/net), porosity, fluid characteristics, fluid saturation) and parameters used to estimate reservoir flow (such as permeability, relative permeability).

Q. WHERE DID YOU GET THE INFORMATION ON THESE PARAMETERS?

A. For some parameters, the information was specified based upon this history of this case. I took the information from Greg Casey's most recent testimony and the Appendix 1 to his report information on thickness (gross/net), porosity, fluid characteristics, fluid saturation, permeability and relative permeability. I used details on the location of TexCom's well relative to the field from a map from the TexCom application. Further, the major fault to the south of the WDW410 well was assumed to not be horizontally transmissive. This assumption is based upon what I understand to be an assumption the TCEQ directed the parties to make.

Q. LET'S DISCUSS THE FIRST MODELING THAT YOU PERFORMED. DESCRIBE IN GENERAL WHAT SCENARIO THAT MODELED.

A. A key to being able to show the potential interaction between TexCom's proposed operations and the proposed disposal zone is to recreate, in a sense, what I will call the "base case" – that is, what it is that TexCom says will occur in its modeling in the remand hearing. Thus, in my first modeling run, I basically reconstructed the modeling done by Greg Casey, using the same inputs from his testimony and the modeling report from March 2009. I used the 80.9 millidarcies permeability, 24% porosity and no horizontal transmissivity at what is referred to as the E4400W fault and a thickness of 145 feet to represent the perforated sands, as he presented in his testimony in the remand hearing.

Q. DID YOU COME UP WITH THE SAME RESULTS AS MR. CASEY?

A. Yes, my model arrived at essentially the same results.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AS DENBURY EXHIBIT 6. CAN YOU PLEASE IDENTIFY THIS DOCUMENT?

A. Yes, it is a plot that I created from Mr. Casey's simulation which shows bottom hole injection pressure as a function of time. I created this plot from the output file produced to us by TexCom.

DENBURY OFFERS DENBURY EX. 6.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AS DENBURY EXHIBIT 7. CAN YOU IDENTIFY IT?

A. Yes, it is a similar Excel plot of the results of my base case simulation in comparison to Mr. Casey's model results.

Q. WHAT DOES YOUR DENBURY EXHIBIT 7 SHOW?

A. The agreement is good. This indicates that there is not a difference in the VIP simulation platform; the same input leads to the same result. It also confirms my interpretation of Mr. Casey's data.

Q. DO YOU ADOPT THE INFORMATION ON DENBURY EXHIBIT 7 AS YOUR TESTIMONY SHOWING THE ABILITY OF THE VIP MODEL TO RECREATE MR. CASEY'S TESTIMONY?

A. Yes.

DENBURY OFFERS DENBURY EX. 7.

Q. DO YOU AGREE WITH ALL OF THE ASSUMPTIONS USED BY MR. CASEY AS INPUTS IN HIS MODEL?

A. No.

Q. WHICH PARTS OF MR. CASEY'S INPUTS DO YOU DISAGREE WITH AND WHY?

A. I have three major disagreements with the assumptions and inputs used by Greg Casey in his model. My major disagreement is his assumption of using what I will call superporosity to simulate an extensive aquifer at the boundaries of his model. In my opinion, that assumption oversimplified the reservoir model and can be shown to give an incorrect answer. I also do not agree with his selection of a grid system and his choice of a PI of 168. I also took a different approach to developing a structure to more accurately represent the regional geology.

Q. CAN YOU EXPLAIN WHAT SUPERPOROSITY IS AND HOW GREG CASEY'S MODEL USED IT?

A. Superporosity is used by Mr. Casey to model the extensive aquifer associated with the Cockfield. Mr. Casey's modeled a 10 mile by 10 mile section of the reservoir. But of course, the reservoir extends well beyond this. So to simulate the extension of the reservoir beyond the 10 mile boundaries of his model, he assumed a porosity of 340% - or superporosity - to simulate this large volume of water to bring the extension of the reservoir into his grid system. Porosity is a measurement of the void space available to store fluid, generally falling between 0 and 40 percent. By using superporosity, he is simulating storing a large volume at the boundaries of his model. This is a common error made in engineers performing reservoir simulation.

Q. WHAT DID YOU DO DIFFERENTLY IN YOUR MODEL?

A. To demonstrate the impact of this superporosity assumption, I repeated Mr. Casey's simulation removing the superporosity and applying an analytical aquifer to the outer boundary of the grid system. All other items remained the same.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AT EXHIBIT 8. CAN YOU IDENTIFY IT?

A. Yes, it is an exhibit that I prepared showing Mr. Casey's bottom hole injection pressure vs. time, but showing the results using the proper treatment of the boundary conditions using an analytical aquifer.

Q. DO YOU ADOPT THE INFORMATION SHOWN IN DENBURY EXHIBIT 8 AS YOUR TESTIMONY IN THIS HEARING?

A. Yes

DENBURY OFFERS DENBURY EX. 8.

Q. WHAT DIFFERENCE, IF ANY, DID THE MODEL SHOW WHEN YOU CORRECTED IT TO USE AN ANALYTICAL AQUIFER?

A. The difference, as shown in Denbury Exhibit 8, is approximately 700 psi greater maximum pressure increase from TexCom's injection after 30 years.

Q. WHAT CAUSES THE CASES TO SHOW THIS DIFFERENCE?

A. Using superporosity mimics the effect of an extended aquifer by essentially pretending at the boundary of the modeled grid system that there is something with artificially (in fact impossibly) high porosity. In other words, by having the superporosity out there, we don't allow the pressure wave to move beyond the grid system. The analytical aquifer allows the pressure wave to move beyond the grid system and more closely represents a real system.

Q. WHAT IS AN ANALYTICAL AQUIFER?

A. The analytical aquifer is a way to correctly simulate the extensive aquifer with mathematical functions to represent the aquifer beyond the grid boundary without having to build your model out to the limits of the reservoir.

Q. IS USING AN ANALYTICAL AQUIFER AN ACCEPTED RESERVOIR SIMULATION TECHNIQUE?

A. Using an analytical aquifer is an established accepted practice to use in reservoir simulation.

Q. DID YOU PERFORM FURTHER ANALYSIS?

A. Yes.

Q. CAN YOU DESCRIBE THAT ANALYSIS?

A. I built a model that in my opinion is a more accurate representation of the actual injection process which is the subject of this hearing. My model differs from Mr. Casey's model in four ways: (1) use of an analytical aquifer for the reasons described above; (2) finer grid system; (3) use of a different PI or well coefficient; and (4) a different structure.

Q. IN YOUR MODEL, DESCRIBE THE FINER GRID SYSTEM THAT YOU USED.

A. I used a much finer grid than Mr. Casey. The cell that contained my well was approximately 10 feet by 10 feet, but Mr. Casey used a cell of 100 feet by 100 feet. The largest grid that I used is about 640 feet by 640 feet, whereas Mr. Casey's largest grid was 11,000 by 11,000 feet. Mr. Casey simulated 25 grid blocks in his x direction and 27 grid blocks in his y direction. My grid system was 87 grid blocks in the x direction and

62 grid blocks in the y direction. I had more than 8 times the number of grid blocks as Mr. Casey. Both models considered a distance of 5 miles from WDW 410 in the east, west and north directions. The southern boundary of the grid was at the W4400E fault.

Q. WHY DID YOU GO WITH THE SMALLER GRID SIZES AND MORE GRIDS?

A. I went with the smaller grid sizes to more accurately predict the pressure increase due to the waste injection at the wellbore. Putting a larger grid at or near the wellbore would tend to artificially lower the pressure increase from the injection.

Q. PLEASE DISCUSS THE CHANGES YOU MADE IN THE STRUCTURE THAT YOU USED IN YOUR MODEL.

A. Geologic structure maps were generally not available for the Cockfield structure away from the Conroe Unit boundary. Therefore, I consulted with Jon Herber regarding what the regional structure might look like. He and I discussed a geomap showing the regional structure in and around the Conroe Field. The geomap is attached to Mr. Herber's testimony as Denbury Exhibit 17. I used a projection of the geomap on the same horizon that TexCom used in its modeling. I felt this gave a better representation of the structure beyond the oil/water contact. In fact, the geomap showed that there would be a syncline north of the well that was not shown in Mr. Casey's input data. What this syncline demonstrates is that at a distance from the Conroe Field, the structure begins to rise.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AS DENBURY EXHIBIT 9. CAN YOU PLEASE IDENTIFY THIS DOCUMENT?

A. It is a chart that I prepared showing the grid and structure that I used in my modeling to simulate the area around the TexCom well.

Q. DO YOU ADOPT DENBURY EXHIBIT 9 AS YOUR TESTIMONY?

A. Yes.

DENBURY OFFERS DENBURY EX. 9.

Q. PLEASE DISCUSS THE CHANGES YOU MADE TO THE PRODUCTIVITY INDEX IN YOUR MODEL.

A. Mr. Casey used a productivity index or PI of 168 in his simulation. In my opinion, this is not a reasonable value to use. I can find nothing to support the choice of 168. In fact, if you used the two injection fall off tests, you will get a PI in the range of 5. To make it clearer as to the effect of the choice of a PI, consider the following example: if you want to inject 16000 stb/d and you have a PI of 160, then it would take a 100 psi pressure drop – the volume divided by the PI - from the wellbore to the formation to inject this quantity of fluid.

Q. WHAT IS THE IMPACT OF USING A HIGHER PI THAN IT SHOULD BE?

A. It makes the well have a greater capability to inject fluids than it would have with the correct PI.

Q. HOW DID YOU CHANGE THIS PART OF MR. CASEY'S MODEL?

A. VIP allows me to use well index. Well index is a coefficient accounting for the constant or geometric part of a radial flow equation. VIP then would use the well index in a manner similar to the PI. I calculated a well index for the well based on the well geometry and a skin of 10. I chose this skin factor based upon the past two well tests presented by TexCom. In the first test, the skin was 5.9. In the second test, the skin was determined to be 22. Ten is a reasonable assumption in light of the two tests that we have and especially in light of the fact that skin generally increases with injection. If we had used the last measured skin of 22, the pressures that I determined would be higher. In terms of PI, my modeling used a value of about 16, about 10 times less than Mr. Casey.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AS DENBURY EXHIBIT 10. CAN YOU IDENTIFY IT?

A. Yes. It is a graph I prepared showing my simulated bottom hole pressure response at the well bore as a function of time compared to the previous simulations we discussed in Denbury Exhibits 7 and 8.

Q. DO YOU ADOPT THE INFORMATION IN DENBURY EXHIBIT 10 AS YOUR TESTIMONY IN THIS HEARING?

A. Yes.

DENBURY OFFERS DENBURY EX. 10.

Q. WHAT DID YOUR MODELING IN DENBURY EXHIBIT 10 SHOW?

A. My opinion, as shown on Denbury Exhibit 10, is that pressure increase after thirty years of injection will be greater than that predicted by Mr. Casey. My simulation shows an approximately 1100 psi increase over what was identified by Mr. Casey.

Q. TO BE CLEAR, WHAT DID YOU ASSUME ABOUT THE E4400W FAULT AND THE PERMEABILITY IN TESTIMONY YOU HAVE PRESENTED TODAY?

A. I assumed that the fault was not horizontally transmissive and that the permeability was 80.9 millidarcies as used by Mr. Casey.

Q. DID YOU CONDUCT ANY FURTHER EVALUATION OF THE MODELING RESULTS?

A. I used the model that generated Denbury Exhibit 10 and plotted the maximum change in pressure profile from the wellbore both perpendicular and parallel to the fault, much like Mr. Casey did in Exhibit 4 of the March 2009 modeling report.

Q. I AM SHOWING YOU WHAT HAS BEEN MARKED AS DENBURY EXHIBIT 11. CAN YOU IDENTIFY IT?

A. Yes. This is a plot of the maximum change in pressure from the wellbore for the life of TexCom's proposed facility.

Q. DO YOU ADOPT THE INFORMATION IN DENBURY EXHIBIT 11 AS YOUR TESTIMONY IN THIS HEARING?

A. Yes.

DENBURY OFFERS DENBURY EX. 11.

Q. WHAT WAS THE RESULT OF YOUR ANALYSIS OF MAXIMUM CHANGE IN PRESSURE FROM THE OPERATIONS OF TEXCOM'S PROPOSED FACILITY?

A. In my opinion, as demonstrated in Denbury Exhibit 11, in all areas north of the fault, we will be above the 421 psi increase used by Mr. Casey in setting his area of review (AOR).

Q. WHAT ELSE DID YOU DEVELOP FROM YOUR MODELING?

A. I specifically looked at the pressures at the W4400E fault.

Q. I AM HANDING YOU WHAT HAS BEEN MARKED AT DENBURY EXHIBIT NO. 12. CAN YOU IDENTIFY IT?

A. Yes. It is a plot that I created from my modeling showing the pressure increase over time at the W4400E fault.

Q. DO YOU ADOPT THIS AS YOUR TESTIMONY?

A. Yes.

DENBURY OFFERS DENBURY EX. 12.

Q. WHAT DID YOU MODEL SHOW ABOUT THE PRESSURES AT THAT FAULT?

A. In my opinion, the pressure increase over time, based on my modeling, at the fault would be approximately 1400 pounds above the current pressure.

Q. IN YOUR YEARS OF EXPERIENCE AS A RESERVOIR ENGINEER, HAVE YOU EVER STUDIED A RESERVOIR WHERE SHALE-SEPARATED SAND UNITS COMMUNICATE?

A. Yes.

Q. CAN YOU EXPLAIN WHAT YOU HAVE SEEN REGARDING COMMUNICATION IN THOSE TYPES OF RESERVOIRS?

A. The communication was determined to be by horizontal communication where there is sand/sand contact and through the fault planes. The Cockfield reservoir at the Conroe Field has the necessary elements (juxtaposed sands across faults and fault planes) for communication to occur.

Q. DOES THIS CONCLUDE YOUR PRE-FILED TESTIMONY FOR THIS MATTER?

A. Yes.

EXHIBIT 5

JAMES W. FAIRCHILD

Fairchild and Wells, Inc.
dba Fairchild & Stan
1011 Highway 6 South, Suite 304
Houston, Texas 77077
(281)497-8990 Office
(281)497-8368 Fax
(713)542-6678 Cell
jfairchild@fawinc.com

EDUCATION

M.S., Mechanical Engineering
University of Florida
August 1965

B.S., Mechanical Engineering
University of Florida
April 1963

EXPERIENCE

1982-Present
President, Fairchild and Wells, Inc. dba. Fairchild & Stan

- Co-founded company in January 1982
- Conduct reservoir characterization and management studies related to the production of oil and gas reservoirs during primary, secondary (waterflood and gas injection) and tertiary (CO_2/hydrocarbon gas injection) operations
- Specialize in the application of reservoir simulation to optimize reservoir development
- Conduct major simulation studies of oil and gas reservoirs including the integration of the surface facilities
- Provide technical support to clients in the use of reservoir simulation
- Conduct gas storage screening studies

DENBURY
Exhibit 5

- Conduct gas storage evaluations to optimize top/base ratios, maximize rate of withdrawal/injection and inventory verification

- Provide economic evaluations for determining market value of clients interest in oil and gas properties

- Managed and conducted research projects related to the co-production of gas and water under contract to the Gas Research Institute

- Directed permit applications for Class I and Class II injection well projects

- Conduct engineering evaluations of geothermal operations

- Prepare and teach industry schools in the areas of gas storage, co-production of gas and water and the development of volatile oil reservoirs

- Provide expert witness testimony related to engineering, economic evaluation of oil and gas developments, gas storage designs and geothermal operations

1980-1981
Senior Vice President, International and Domestic Operations

INTERCOMP

- Responsible for the marketing and execution of all International and Domestic consulting projects performed from INTERCOMP's corporate office

- Conducted reservoir characterization and management studies for many of the world's largest oil and gas reservoirs

1979-1980
Vice President, International Consulting,

INTERCOMP

- Responsible for all international projects performed in the Houston office

- Conducted and presented study results to INTERCOMP's international clients

1976-1979
General Manager, Energy Resources Division

INTERCOMP

- Responsible for marketing, coordination, supervision, and execution of underground gas storage studies

- Conducted storage projects including aquifer storage, depleted oil and/or gas reservoir storage and major international gas utilization studies

- Conducted reservoir characterization and simulation studies of large Mid-East reservoirs, including technical participation, project planning, and staff coordination

- Responsible for the development of coalbed methane reserves

1971-1976
Project Manager
INTERCOMP Houston

- Taught the practical application of reservoir simulation to the petroleum industry

1965-1971

Senior Research Engineer

Esso Production Research Company

- Performed research in thermal recovery schemes and in situ recovery of shale oil

- Developed field test design, implementation and interpretation of test results of new recovery schemes

- Conducted reservoir engineering studies using numerical simulation

- Performed well test (PTA) design and analysis, including on site supervision, of exploration wells

- Company schools attended: Reservoir Engineering, Production Engineering, Well Testing, Fracturing, Reservoir Simulation, and Technical Writing

1963-1964
Research Engineer
University of Florida

- Performed environmental studies of fallout shelters under simulated occupancy conditions - Contract from Office of Civil Defense, Washington, D.C.

SUMMARY OF CLASS I/II INJECTION WELL PROJECTS COMPLETED BY FAIRCHILD AND WELLS, INC.

CLASS I INJECTION WELL USEPA NO MIGRATION PETITION REISSUANCES

COMPANY	SITE	DATE	PURPOSE
BASF Corporation	Geismar, Louisiana	2006	renewal

STATE PERMIT APPLICATIONS

COMPANY	SITE	DATE	TYPE OF WELL
Occidental Chemical Corporation	Corpus Christi, Texas	1996	Class I hazardous
Chevron Chemical Company	Belle Chasse, Louisiana	1996	Class I non-hazardous
Lyondell Petrochemical Company	Channelview, Texas	1998	Class I hazardous
BASF Corporation	Geismar, Louisiana	2002	Class I hazardous
James Hardie Building Products	Cleburne, Texas	2006	Class I non-hazardous
Carrizo Oil and Gas, Inc.	Anderson County, Texas	2008	Class II SWD

INJECTION WELL TESTING / FEASIBILITY STUDIES / OTHER

- Northern California Power Association, Lodi, CA, Annual MIT tests 2000 through 2010
- Step Rate Testing for determination of maximum injection pressure for Class II brine disposal wells, general injection well consulting services, US Liquids of Louisiana, 2001-2004
- Analysis of Brine Disposal Potential, New Avoca Gas Storage LLC, Avoca, New York, July, 2001
- Brine Disposal Feasibility Study, Chaparral Project, Aquila Energy, November, 2001
- Injection Well Feasibility studies for various clients in Texas, Louisiana, Ohio, Illinois

- FAW has provided Expert Witness testimony regarding business practice in the Class I injection well industry, 2007

PROFESSIONAL MEMBERSHIPS AND REGISTRATIONS

- Registered Professional Engineer, Texas
- Society of Petroleum Engineers
- Geothermal Resources Council
- National Energy Services Association

PUBLICATIONS

- Fairchild, J. W., and E. G. Woods. *"Pulse Test Method for Measuring Thermal Properties of Solids,"* presented at the Annual SPE Meeting in New Orleans, October 1971.

- Litvak, M. L., Clark, A. J., Fairchild, J. W., Fossum, M. P., MacDonald, C. J., and Wood, A. R. SPE Paper #38885, *"Integration of Prudhoe Bay Surface Pipeline Network and Full Field Reservoir Models,"* presented at the Annual SPE Technical Conference, October 1997.

- Fairchild, J.W., Ball, B., and Kuramshina, N., *"The Importance of Geology in Reservoir Simulation - An Engineer's Perspective,"* presented at the Second International Conference of Azerbaijan Association of Geologists, Azerbaijan, June 8, 1995.

- Presentations at technical seminars relating to reservoir simulation and economic development of underground gas storage.

- Numerous technical reports and documents prepared for FAW clients on all aspects of reservoir engineering and/or reservoir development.